WHAT IS CLAIMED IS:

1. A method for synthesizing a compound having the formula $E(GeH_3)_3$ wherein E is selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P), the method comprising combining GeH_3Br with $[(CH_3)_3Si]_3E$ under conditions whereby $E(GeH_3)_3$ is obtained.

2. The method of claim 1 further comprising purifying the obtained $E(GeH_3)_3$.

3. The method of claim 1 wherein the step of purifying the obtained $E(GeH_3)_3$ comprises trap-to-trap fractionation.

4. The method of claim 1 wherein $E(GeH_3)_3$ is obtained with a yield from about 70% to about 76%.

5. A method for synthesizing a compound having the formula $E(GeH_3)_3$ wherein E is selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P), the method comprising combining GeH_3Br with $[(CH_3)_3Si]_3E$ to obtain $E(GeH_3)_3$ according to the formula:

$$3\ GeH_3Br + [(CH_3)_3Si)]_3E \rightarrow 3\ (CH_3)_3Si\ Br + (GeH_3)_3E$$

6. The method of claim 5 further comprising purifying the obtained $E(GeH_3)_3$.

7. The method of claim 5 wherein the step of purifying the obtained $E(GeH_3)_3$ comprises trap-to-trap fractionation.

8. The method of claim 5 wherein $E(GeH_3)_3$ is obtained with a yield from about 70% to about 76%.

9. A method for doping a region of a semiconductor material in a chemical vapor deposition reaction chamber, the method comprising introducing into the chamber a gaseous precursor having the formula $E(GeH_3)_3$, wherein E is selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P).

10. The method of claim 9 wherein the semiconductor material comprises silicon (Si).

11. The method of claim 9 wherein the semiconductor material comprises germanium (Ge).

12. The method of claim 9 wherein the semiconductor material comprises SiGeSn.

13. The method of claim 9 wherein the semiconductor material comprises SnGe.

14. A method for depositing a doped epitaxial Ge-Sn layer on a substrate in a chemical vapor deposition reaction chamber, the method comprising:

introducing into the chamber a gaseous precursor comprising SnD_4 mixed in H_2 under conditions whereby the epitaxial Ge-Sn layer is formed on the substrate; and

introducing into the chamber a gaseous precursor having the formula $E(GeH_3)_3$, wherein E is selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P).

15. The method of claim 14 wherein the gaseous precursor is introduced at a temperature in a range of about 250°C to about 350°C.

16. The method of claim 14 wherein the substrate comprises silicon.

17. The method of claim 14 wherein the silicon comprises Si(100).

18. The method of claim 14 wherein the Ge-Sn layer comprises Sn_xGe_{1-x} and x is in a range from about .02 to about .20.

19. A method for forming a Group IV semiconductor film, the method comprising

forming the Group IV semiconductor by a chemical vapor deposition method, said Group IV semiconductor film being doped with impurities at a concentration ranging from about 10^{21} atoms/cm^3 to about several percent, the impurities being selected from the group consisting of arsenic (As), phosporous (P) and antimony (Sb).

20. A method for forming a Group IV semiconductor film, the method comprising:

forming the Group IV semiconductor film by a chemical vapor deposition method; and

while forming the Group IV semiconductor film, doping the film with impurities at a concentration ranging from about 10^{21} atoms/cm^3 to about 3 at. %, the impurities being selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P)

21. The method for forming a Group IV semiconductor film according to claim 20, wherein t arsenic (As), antimony (Sb) and phosphorus (P) are added to the Group IV semiconductor film by diffusion methods.

22. The method for forming a Group IV semiconductor film according to claim 20, wherein said doping step comprises introducing the As, P, or Sb impurities into a reaction chamber as hydride compounds, together with at least SnD_4, GeH_4, Ge_2H_6.

23. A method of preparing $(E)H_x(GeH_3)_{3-x}$, where x= 1 or 2 and E is selected from the group consisting of P, As, Sb, the method comprising reacting inorganic or orhanometallic compounds of the E element with an alkali germyl or a halogenated germane.

24. The method of preparing $(E)H_x(GeH_3)_{3-x}$ according to claim 23 wherein the alkali germyl comprises $KGeH_3$.

25. The method of preparing $(E)H_x(GeH_3)_{3-x}$ according to claim 23 wherein the halogenated germane comprises $BrGeH_3$.